Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

5   1-22. (cancelled)

23. (currently amended) An intra-field interpolation device for converting an interlaced video signal to a de-interlaced video signal, the device comprising:

10   a gradient unit receiving an image field for determining a gradient of a first line above a target pixel in the image field and a second line below the target pixel in the image field;

       a first pixel difference unit receiving [[an]] the image field of the interlaced video

15   signal for determining a pair of pixel difference sets on either side of a normal axis of [[a]] the target pixel in an alternate field of the interlaced video to thereby generate two candidate blending angles for the target pixel, wherein the first pixel difference unit is for generating the two candidate blending angles for the target pixel further according to the gradient;

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       a second pixel difference unit receiving the image field for determining two reference pixel differences in the image field being along a reference angle on either side of the normal axis of the target pixel;

25   an angle selection unit being coupled to the first pixel difference unit and the second pixel difference unit for determining an optimal blending angle according to the two candidate blending angles determined by the first pixel difference unit, and the two reference pixel differences determined by the second pixel difference unit; and

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a weighted blending unit being coupled to the angle selection unit and receiving the image field for blending a plurality of pixel values in the image field along the optimal blending angle to thereby generate the target pixel in the de-interlaced video signal.

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24. (cancelled)

25. (previously presented) The device of claim 23, wherein the second pixel difference unit is for determining the two reference pixel differences being along a 45 degree

10   reference angle on either side of the normal axis of the target pixel.

26. (currently amended) ~~The device of claim 23,~~ An intra-field interpolation device for converting an interlaced video signal to a de-interlaced video signal, the device comprising:

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a first pixel difference unit receiving an image field of the interlaced video signal for determining a pair of pixel difference sets on either side of a normal axis of a target pixel in an alternate field of the interlaced video to thereby generate two candidate blending angles for the target pixel;

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a second pixel difference unit receiving the image field for determining two reference pixel differences in the image field being along a reference angle on either side of the normal axis of the target pixel;

25   an angle selection unit being coupled to the first pixel difference unit and the second pixel difference unit for determining an optimal blending angle according to the two candidate blending angles determined by the first pixel difference unit, and the two reference pixel differences determined by the second pixel difference unit; and

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a weighted blending unit being coupled to the angle selection unit and receiving the image field for blending a plurality of pixel values in the image field along the optimal blending angle to thereby generate the target pixel in the de-interlaced video signal;

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wherein the angle selection unit includes an angle voting unit for determining the optimal blending angle further according to two previously utilized blending angles; wherein the two previously utilized blending angles correspond to blending angles for two previous pixels that were interpolated prior to the target

10   pixel.

27. (previously presented) The device of claim 23, wherein the weighted blending unit is for performing weighted blending of a plurality of pixels values further along the normal axis to generate the target pixel.

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28. (previously presented) The device of claim 27, wherein the weighted blending unit is for performing a two-phase weighting algorithm to interpolate the target pixel; pixel information along the normal axis being weighted according to a first weight, and pixel information along the optimal axis being weighted according to a second

20   weight.

29. (previously presented) The device of claim 23, further comprising a low-pass filter for removing noise from the interlaced video signal.

25   30. (previously presented) The device of claim 23, wherein the first pixel difference unit is for utilizing a first pixel difference algorithm being substantially different from a second pixel difference algorithm utilized by the second pixel difference unit.

30   31. (currently amended) A<u>n</u> intra-field interpolation method of converting an

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interlaced video signal to a de-interlaced video signal, the method comprising:

receiving an image field of the interlaced video signal;

5 utilizing a gradient unit for determining a gradient of a first line above a target pixel in the image field and a second line below the target pixel in the image field;

utilizing a first pixel difference unit for determining a pair of pixel difference sets on either side of a normal axis of [[a]] the target pixel in an alternate field of the

10 interlaced video to thereby generate two candidate blending angles for the target pixel, wherein the two candidate blending angles for the target pixel are generated further according to the gradient;

utilizing a second pixel difference unit for determining two reference pixel

15 differences in the image field being along a reference angle on either side of the normal axis of the target pixel;

utilizing an angle selection unit for determining an optimal blending angle according to the two candidate blending angles and the two reference pixel

20 differences; and

utilizing a blending unit for blending a plurality of pixel values in the image field along the optimal blending angle to thereby generate the target pixel in the de-interlaced video signal.

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32. (cancelled)

33. (previously presented) The method of claim 31, further comprising determining the two reference pixel differences being along a 45 degree reference angle on

30 either side of the normal axis of the target pixel.

34. (currently amended) ~~The method of claim 31,~~ <u>An intra-field interpolation method of converting an interlaced video signal to a de-interlaced video signal, the method comprising:</u>

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<u>receiving an image field of the interlaced video signal;</u>

<u>utilizing a first pixel difference unit for determining a pair of pixel difference sets on either side of a normal axis of a target pixel in an alternate field of the</u>

10   <u>interlaced video to thereby generate two candidate blending angles for the target pixel;</u>

<u>utilizing a second pixel difference unit for determining two reference pixel differences in the image field being along a reference angle on either side of the</u>

15   <u>normal axis of the target pixel;</u>

<u>utilizing an angle selection unit for determining an optimal blending angle according to the two candidate blending angles and the two reference pixel differences, and</u>

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~~further comprising determining the optimal blending angle~~ <u>further</u> according to two previously utilized blending angles; wherein the two previously utilized blending angles correspond to blending angles for two previous pixels that were interpolated prior to the target pixel[[.]]<u>; and</u>

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<u>utilizing a blending unit for blending a plurality of pixel values in the image field along the optimal blending angle to thereby generate the target pixel in the de-interlaced video signal.</u>

30   35. (previously presented) The method of claim 31, further comprising performing

weighted blending of a plurality of pixels values further along the normal axis to generate the target pixel.

36. (previously presented) The method of claim 35, further comprising performing a two-phase weighting algorithm to interpolate the target pixel; pixel information along the normal axis being weighted according to a first weight, and pixel information along the optimal axis being weighted according to a second weight.

37. (previously presented) The method of claim 31, further comprising removing noise from the interlaced video signal.

38. (previously presented) The method of claim 31, further comprising utilizing a first pixel difference algorithm to determine the pair of pixel difference sets being substantially different from a second pixel difference algorithm utilized to determine the two reference pixel differences.